Renewable Energy
in the
Midwest Region

Assistant Secretary – Indian Affairs

Division of Energy and Mineral Development

June 2015

Energy and Mineral Development Program (EMDP):

- Provides financial assistance and in-house technical support to Tribes for performing data collection and investigations of their energy and mineral potential.
- An annual program using a competitive evaluation process to select proposed projects from tribes.
- Tribes use this information to
  - plan where they want development to occur;
  - promote their lands to industry partners;
  - negotiate the best economically beneficial agreement with partners;
  - develop the resource themselves

2014 EMDP Grant Awards

- DEMD received a total of 79 proposals from tribes totaling just over $28 million
- Over $9.46 million was awarded to 45 tribal projects for the 2014 EMDP grant year

Funded Project by Commodity

COMMODITY	NUMBER	AMOUNT
Renewable Energy	17 projects	$2,059,413
Conventional Energy (Oil & Gas, Geothermal)	10 projects	$2,504,883
Mineral	13 projects	$1,996,000
Navajo Coal	1 project	$1,000,000
Hydro Projects	4 projects	$1,900,000

Mission

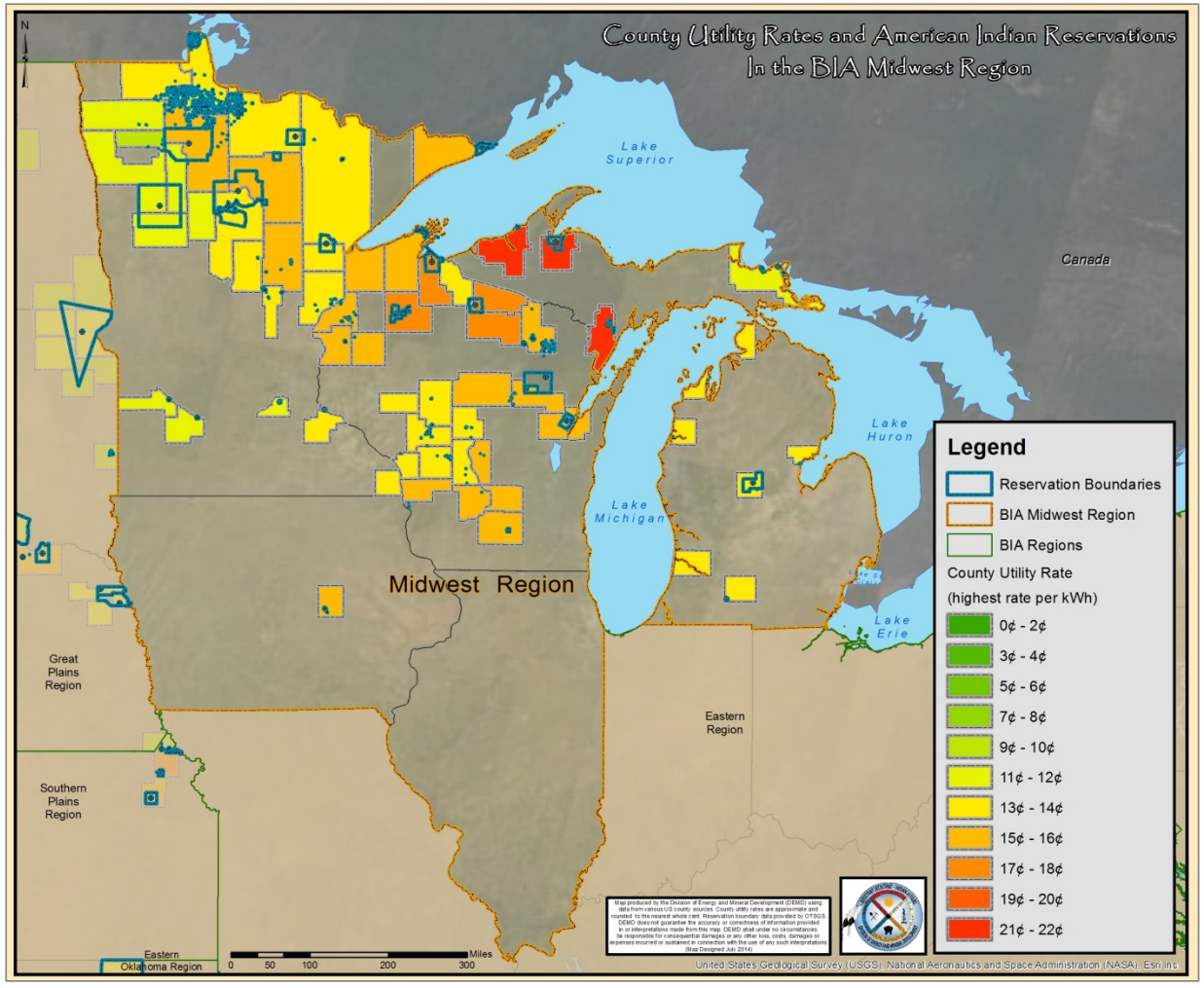
Provide the best possible technical and economic advice and services in assisting Indian mineral owners to achieve economic self-sufficiency by creating sustainable economies through the environmentally sound development of their energy and mineral resources.

"If you don't know where you are going, you'll end up someplace else." -Yogi Berra

Midwest Region – Electricity Market

Average Residential Electricity Rates

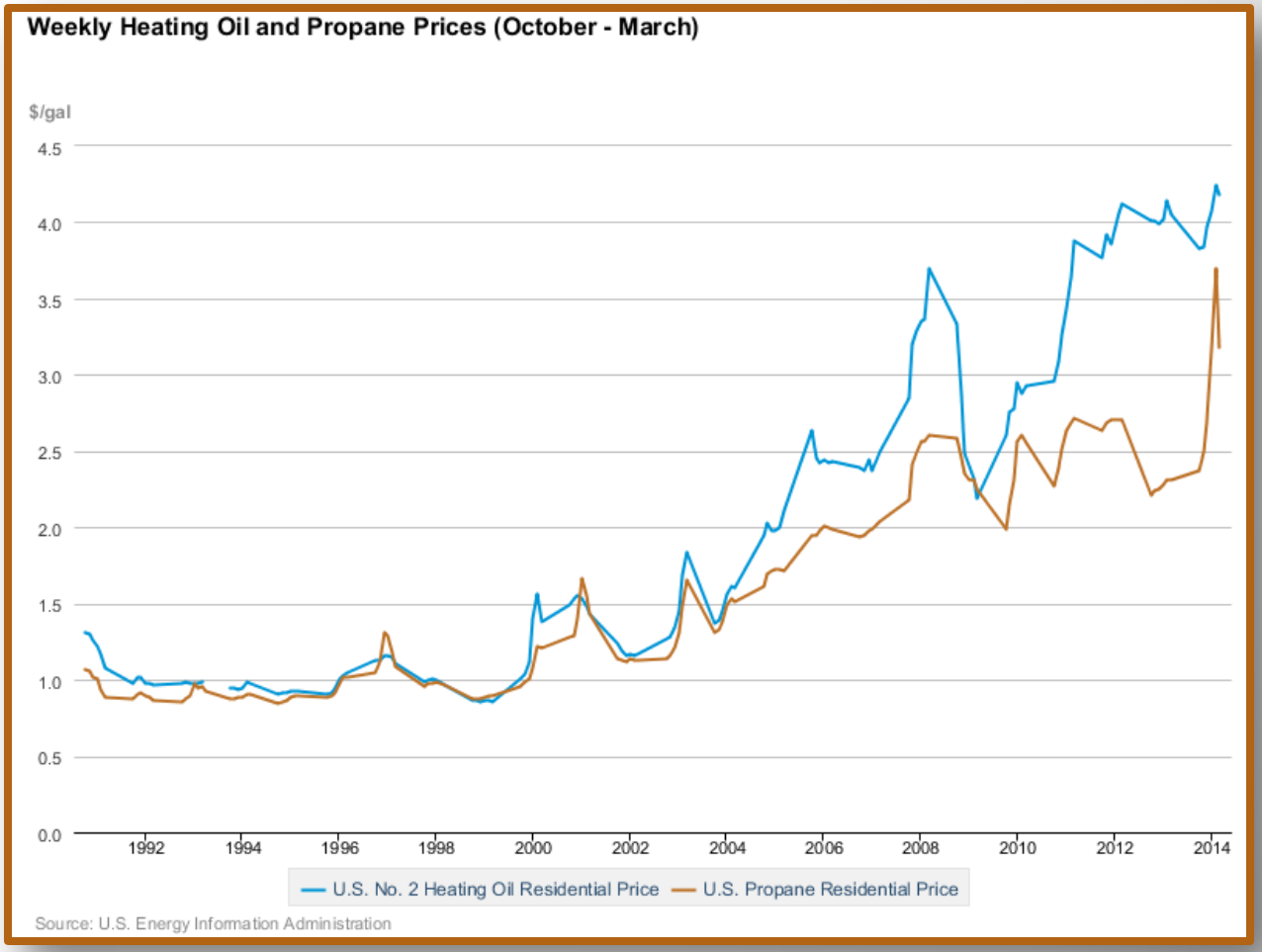
US	$0.12/kWh
Minnesota	$0.12/kWh
Wisconsin	$0.14/kWh
Michigan	$0.14/kWh
Iowa	$0.12/kWh



Midwest Region – Heating Market

Rising Fuel Prices:

- Frigid temperatures
- Increased demand for drying crops
- Supply shortages



Energy Development Strategies

Local resources→ Local energy→ Local economic impact

Renewable Energy Resources

Secondary (Waste) Products for Local Energy

Biomass Wastes

- Food wastes
- Saw mill waste
- Forest waste
- Municipal solid waste
- Crop waste
- Animal waste
- Waste water treatment plants
- Any other waste from nearby industry, including heat waste

Natural Gas:

- Gas from nearby pipeline
- Heat from nearby compressor station

Cogeneration

- **Utilize both heat and power**
- **Increased system efficiency**
- **Greater rate of return on investment**

Opportunities in the Midwest Region

BIOMASS

- **Community Scale**
  - Wood chips or pellets for boilers/stoves
- **Industrial Scale**
  - Chip and/or pellet manufacturing
  - Combined heat and power (CHP)
- **Utility Scale**
  - Large power plants are tough

Feasibility Considerations
- Existing building energy systems
- Detailed resource assessment
- Complimentary to forest management

DEMD Biomass Projects	
Bad River	CHP for Casino and community
Bois Forte	District heating for tribal buildings
Fond du Lac	Wood boiler for heating community buildings
Fond du Lac	Micro wood chipping study
Forest County Potawatomi	Anaerobic Digestion
Ho-Chunk	Anaerobic Digestion
Ho-Chunk	Waste Gasification
Menominee	CHP for MTE saw mill

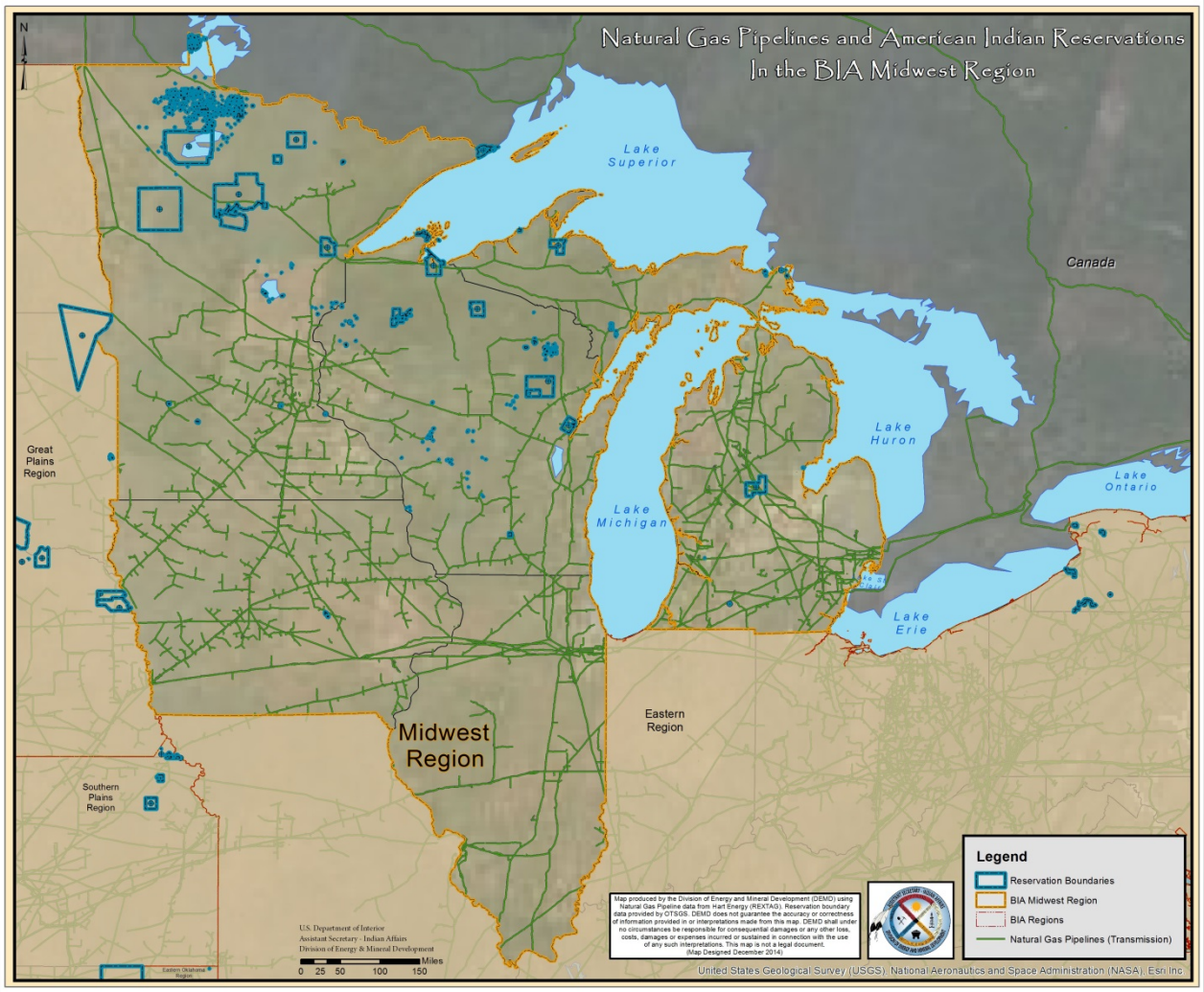
Opportunities in the Midwest Region

NATURAL GAS

- **Community Scale**
  - Home heating
- **Industrial scale**
  - Combined heat and power

Feasibility Considerations

- Access to pipeline infrastructure



Blue Lake Rancheria

Combined Heat and Power Project Utilizing Sawmill Wood Waste

- Goal: create local heat and power supply that can be used when the local grid is experiences power outages.
- Resource: sawmill wood waste
- Project:
  - Wood waste is used to create a synthetic gas, which is purified and used in a fuel cell to create reliable electricity for the casino/convention center.
  - The casino/convention center is the local meeting area during power outages.

Anticipated outcome:

- Jobs – power plant operations
- Reliable electric supply
- Decrease use of diesel during power outages

Opportunities in the Midwest Region

ENERGY EFFICIENCY

- Easiest way to save
  - Change your light bulbs
  - Reduce heat loss

- Generally not funded through EMDP

Fond Du Lac Case

LED light upgrade at Black Bear Casino

Paid for itself after one year of energy savings

Emerging opportunity

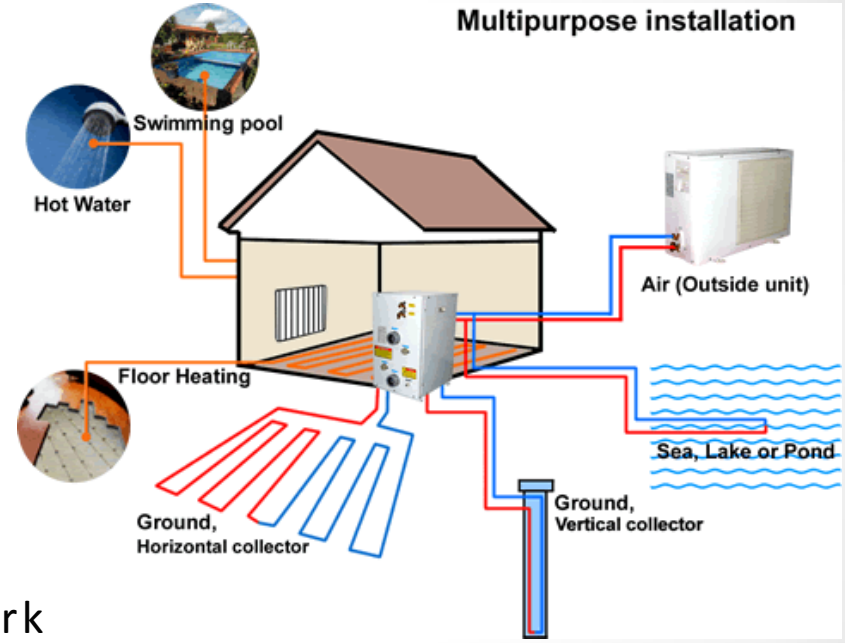
- Carbon credits from efficiency upgrades

Opportunities in the Midwest Region

GEOTHERMAL

- **Community Scale**
  - Geothermal Heat pumps
  - Some limitations in the Midwest

Feasibility Considerations
  - Geology
  - EMDP can support engineering work



Opportunities in the Midwest Region

HYDRO

- **Industrial/Utility Scale**
  - Retrofit existing dams or irrigation systems

Feasibility Considerations

- Cost to retro-fit
- Dam safety upgrades
- Access to transmission lines

Menominee Case

Feasibility to retrofit Neopit dam

Payback 20+ years

Could revisit with BIA if/when upgrades occur

Opportunities in the Midwest Region

SOLAR

DEMD Solar Project	
Fond du Lac	Engineering for 1 MW ground mount near Casino

- **Community Scale**
  - Roof-top PV, net meter
  - Solar thermal heating
  - Incentive driven
    - New Minnesota RPS solar carve out
    - 1.5% by 2020 for public utilities
    - 10% must be solar PV systems <20 kW each

Feasibility Considerations

- Companies will assess for free
- EMDP can pay for engineering work

Opportunities in the Midwest Region

WIND

- **Community Scale**
  - Small scale, net meter
  - Historical challenges with O&M
- **Utility scale**
  - Land lease
  - Dwindling incentives, uncertain future

Feasibility Considerations

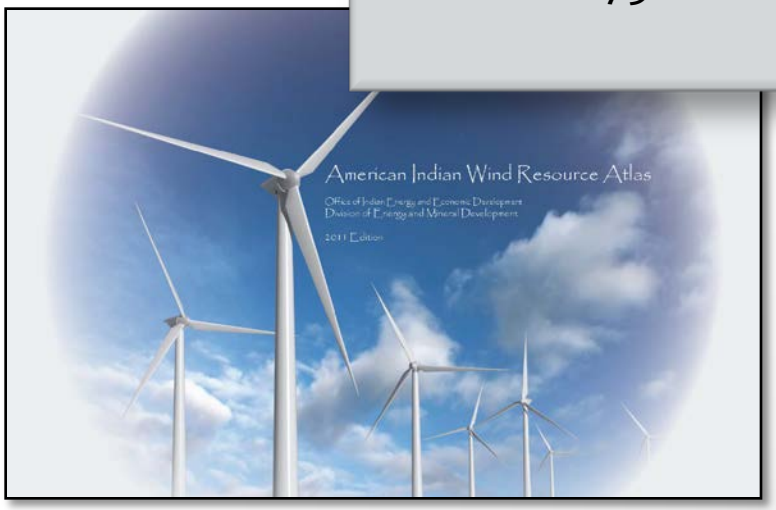
- Policy incentives
- Net metering rules

White Earth Case

50 kW @ Naytahwaush Humanity Center

35 kW @ Ojibwe Building Supply

New 750 kW



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